

R. O.

BIOLOGICAL EVALUATION
IPS PINI (SAY.) INFESTED LOGGING
AND THINNING SLASH
Boise National Forest
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INTRODUCTION

Engraver beetles have a long history of causing top killing and mortality to second growth ponderosa pine stands in southwestern Idaho. On occasion when natural conditions are favorable, localized buildups occur and decline rapidly. In recent years, with accelerated logging activity in second growth stands, Ips buildups have become more prevalent. This is primarily due to the fact that logging companies prefer to work the lower pine zones early in the season then terminate and move to higher elevations and different timber types. When this happens Ips populations that have built up in slash have no new slash available and standing tree attacks occur.

Repeated early logging on 3-5 year sales has caused annual losses in second growth ponderosa pine. A good example of this can be shown from the Trail Creek timber sale on the Boise National Forest. Logging terminated earlier in the season than anticipated and Ips beetles had infested the slash. Emerging adults attacked 397 pines in scattered groups within and immediately adjacent to the sale area. A 100 percent cruise showed a loss of 5,609 bd. ft. of timber. The most important fact is that these second growth stands are the timber of the future.

Increasing emphasis on doing a more intensified job of land management plus the need to protect our young timber stands dictates the need for controlling Ips populations when they become a threat to second growth stands.

General Information

Casual Agent - Pine engraver beetle, Ips pini (Say.)

Host - Ponderosa pine, Pinus ponderosa Laws

Location - Virgil Gulch and Trail Creek timber sales - Thinning, Long Gulch

Type of Damage - Killing of second growth ponderosa pine

Extent of Infestation - Virgil Gulch - 110 piles of green infested logging slash on approximately 49 acres. Trail Creek - 10 acres - 6-8 in. logs of various lengths plus whole felled trees scattered over area - no piling.

Treating will be on a piece by piece method. Long Gulch - 20 acres of thinning. Infested material consists of whole, felled trees.

Biological Information

VIRGIL GULCH - Approximately 110 piles of logging slash plus some scattered single pieces of ponderosa pine are located on 49 acres. As of May 8, 1973, Ips beetles had attacked virtually all material 14 inch diameter and smaller. Gallery extension was complete. Eggs and larvae are present with larval hatch exceeding 50 percent. Attack density is heavy and broods appear healthy. This year we are experiencing an early and unusually warm spring with daytime temperatures in the mid-80's. If this weather pattern holds, adult emergence should occur sometime around June 1. Treating should start prior to that date.

This area was planned as a seed tree unit, and as such leave trees are widely spaced with a residual basal area of 30 sq. ft./acre. If the current Ips buildup is not controlled, there is a good chance that valuable seed trees will be killed.

TRAIL CREEK - This area was commercially thinned through the late spring and summer of 1972. Considerable slash was put down and Ips made successful attacks. Emerging generations continued to build up as fresh slash was created. The logger left the area earlier than anticipated, August 2, 1972. Subsequently, populations that had developed in slash emerged and attacked standing trees. The result was a high resident population of Ips concentrated in a fairly small area. The residual stand presently has a basal area of 54 sq. ft./acre.

Thinning of approximately 10 acres in October and November 1972, was done on the assumption that thinning slash would dry out in time to prevent broods from completely developing if they filled into felled trees. On April 16, 1973, an inspection of the Trail Creek thinning showed Ips beginning to attack felled trees. It is assumed attacks were being made by the fairly heavy overwintering adult populations. A follow-up inspection was made on May 9, 1973, at which time over 90 percent of the thinned trees were supporting heavy Ips broods in the egg and larval stages. Broods appeared healthy and inner bark moisture was prevalent.

In most cases it would be doubtful if broods could make it through a complete cycle under these conditions. Conditions being that of trees cut late last fall. However, southwestern Idaho experienced an unusual light snow fall in the lower mountainous regions, which apparently let the felled trees overwinter without sour-sapping or otherwise adversely affecting them. In addition, unusually low precipitation rates were encountered during the spring. Finally, starting in late April and early May warmer than normal free air temperatures occurred. All of these factors favor rapid Ips development.

LONG GULCH - Twenty acres of ponderosa pine up to 10" d.b.h. was thinned through late November 1972. On Wednesday, May 16, 1973, Zone and Boise District personnel inspected the thinning site. Heavy Ips attacks were occurring on all felled trees 4 inches diameter and greater. Egg gallery extension was not completed and females were still in the process of laying eggs. In warmer areas small larvae were observed and the brood appeared to be healthy. Unattacked sections of trees were quite moist and the cambium showed no signs of sour sapping. All indications were that habitat was favorable for the brood to complete a normal cycle through to adults. No new thinning or logging is planned so emerging adults will have no option but to attack residual standing trees. The area is presently composed of ponderosa pine with a basal area of 70 sq. ft./acre and Douglas fir with a basal area of 10 sq. ft./acre.

Environmental Factors

As previously stated, weather conditions from October 1972 through May 1973, varied drastically from seasonal norms. Precipitation rates below 6,000 feet were considerably under long range yearly averages. Also, snow depths were abnormally low. The light snow cover left much of the slash exposed and in a frozen condition throughout most of the winter. For reasons not clearly understood, the slash and felled trees came through the winter in exceptionally good condition with high inner bark moisture and little tendency to sour sap. Material in this condition has provided excellent host material for Ips buildups.

An illustration of differential climatic conditions can be shown by comparing yearly weather records from Idaho City, Idaho, which is approximately the same elevation as the three problem areas and only a few air miles distant.

	<u>Total Snow Inches</u>	<u>Max. Depth on Ground Inches</u>	<u>Total Precip.</u>
December 1971	51.0	36	5.43
December 1972	16.0	10	4.22
January 1972	29.0	38	7.06
January 1973	18.0	12	2.98

Recommendations

At the present time large populations of Ips are infesting three areas of logging and thinning slash on the Boise National Forest. These beetles pose a threat to residual standing second growth ponderosa pine unless control is undertaken.

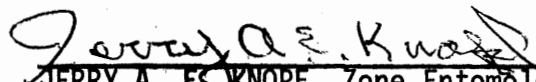
Burning of slash would be an effective control. However, the period of time for burning coincides with and continues into high fire danger periods in lower elevational zones of southwestern Idaho.

Chipping slash would be another effective method of minimizing Ips damage. To date, however, neither the Forest Service or logging companies have found it economically justifiable to purchase such specialized equipment.

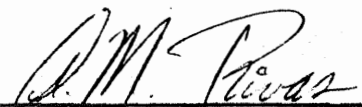
With the recent approval for use of Lindane to control engraver beetles, we have an effective management tool to minimize damage. This evaluation is based on using Lindane to control Ips populations that have built up in slash on the Virgil Gulch and Trail Creek timber sales. In addition, thinning slash in Long Gulch should be treated. All three areas are on the Boise Ranger District, Boise National Forest.

It is recommended that mist blown Lindane in a #2 fuel oil carrier be applied to infested slash prior to adult emergence. Past experience has shown this control method quite effective in minimizing Ips damage.

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